



Agricultural
Research
Service

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Influence of Cover Crops and Tillage on Cotton Production on a Sandy Coastal Plain Soil

Why Does it matter?

Cover crops are essential for reducing soil erosion and evaporative water loss in conservation cropping systems. They add additional biomass to cropping systems needed to restore soil organic matter in Southeastern soils. A number of cover crops are available that can provide benefits to the following summer crop by helping to reduce diseases, weeds, and pests, and improve water and nutrient use. Producers often make decisions about which cover crop to grow with limited information on performance, costs and returns.

What was done?

Seven cover crops were compared for use in conservation cropping systems for cotton on a sandy Coastal Plain soil. Rye, the standard cover crop for cotton in the Southeast, was included as a control. Two of the cover crops, black oat and oilseed radish, are major cover crops in southern Brazil and Paraguay. The legumes Austrian winter pea, balansa clover, crimson clover, and hairy vetch, were included to evaluate nitrogen contributions. The cover crop effects on cotton were compared using strip-tillage and no-tillage.

What was found?

Cover crop biomass was greatest from rye, intermediate from black oat, oilseed radish, hairy vetch and Austrian winter pea, and less from crimson clover and balansa clover. The legumes hairy vetch and Austrian winter pea fixed enough nitrogen to provide more than 35% of the nitrogen needed to grow a cotton crop on these soils. Cotton growth following the cover crops was similar most years but positive benefits from black oat were detected. Cotton yields and



estimated annual returns were greatest following black oat and rye and were greater in the strip-tillage system than in the no-till system.

What is the impact?

Net profit for cotton producers could increase by \$20 to \$30 per acre by adoption of black oats with strip-tillage compared to using rye. Strip-tillage proved to be more profitable than no-till as seen from a small increase in net returns. Because a majority of the 2.9 million acres of cotton produced in the Southeast is located on the Coastal Plain many cotton producers in the region would benefit from adopting this system. The cost of adoption would be minimal for many producers because of the significant adoption of conservation systems for cotton production in the region.

Research Team and Contact information

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